AMENDMENTS TO THE DRAWINGS

The attached sheet of drawings includes changes to Figure 16. This sheet, which includes Figure 16, replaces the original sheet including Figure 16. In Figure 16, the legend "PRIOR ART" has been added.

Attachment: Replacement Sheet

REMARKS

Please reconsider the application in view of the foregoing amendments and the following remarks.

Status of Claims

Claims 1-12 are pending in the present application. Claims 1, 7 and 9 are herein amended. No new matter has been entered.

Information Disclosure Statement

Applicants note with appreciation the Examiners thorough consideration of the references cited in the Information Disclosure Statements (IDS) submitted on May 4 and October 3, 2006.

Drawings

The Office Action stated that Figure 16 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. Applicant herein amends Figure 16.

Claim Objections

The Office Action presented objections to claims 1-6 and 12.

On page 2, item 3, the Examiner has set forth his reasons for objecting to claims 1-6 and 12. Applicants has amended claim 1 to overcome the objection for claims 1-6 and 12.

In claim 7, line 6, the Office Action objects to the use of brackets enclosing the word "common". Applicant has amended claim 7 to overcome this rejection.

In claim 9, line 5, the Office Action objected to the phrase, "0 data of a predetermined length..." and contended that "[t]he use of "0" appears to be a typographical error."

Applicant herein amends claim 9 by replacing the phrase "0 data of a predetermined length" with "zero data sequence of a predetermined length," support for which may be found in at least Figs. 1 and 14 where length L2 is shown to be "000...0," to further clarify the subject matter of claim 9.

Claim Rejections – 35 U.S.C. §101

The Office Action has rejected claims 1-5 and 7-11 under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. Applicant herein amends independent claims 1 and 7 in order to overcome this rejection. Support for these amendments is replete throughout the present specification.

Importantly, however, since claims 2-5, 9 and 11 were objected to and rejected on merit only under 35 U.S.C. §101, Applicants respectfully submit that these claims 2-5, 9 and 11 are now in condition for allowance.

Claim Rejections - 35 U.S.C. §103

As to the merits of this case, the Examiner sets forth the following rejections:

Claim 1 was rejected under 35 U.S.C. 103(a) as being unpatentable over **Applicant's Admitted Prior Art** (AAPA) in view of **Kim et al.** (US 2002/0181554).

Claims 6 and 12 were rejected under 35 U.S.C. 103(a) as being unpatentable over **Applicant's Admitted Prior Art** (AAPA) in view of **Kim et al.** (US 2002/0181554) as applied to claim 1 above, and further in view of **Hottinen et al.** (US 2005/0078761).

Claims 7-8 and 10 were rejected under 35 U.S.C. 103(a) as being unpatentable over **Applicant's Admitted Prior Art** (AAPA) in view of **Kim et al.** (US 2002/0181554) further in view of **Hottinen et at.** (US 2005/0078761).

Each of these rejections is respectfully traversed.

Independent Claims 1 and 7

The Office Action has not established *prima facie* case of obviousness because the references, even when combined, do not suggest all of the claimed steps.

Claim 1, as amended, is drawn to ... *the multipath characteristic measurement signal and data transmission signals are a signal array formed by a plurality of coefficient matrices each having row vectors that are orthogonal to one another within the matrices and which comprise at least one coefficient array that is common in the column direction or row direction; and the multipath characteristic measurement signal formed by the respective coefficient matrices is the same signal array formed by the one common coefficient array.*

Claim 7, as amended, is drawn to ... *forming, in the reception processing device, a matrix of an arbitrary length by selecting, from a plurality of orthogonal square matrices that comprise a common row vector or column vector, the common row vector or column vector and an arbitrary number of row vectors or column vectors that are orthogonal to the common row vector or column vector; forming, in the reception processing device, a multipath characteristic measurement signal array by multiplying each of the coefficient arrays of the common row vector or column vector by a multipath characteristic measurement signal; forming, in the reception processing device, a data transmission signal array by multiplying each of the coefficient arrays of the other row vector or column vector in the matrix by each of the plurality of data transmission signals; and rendering, in the reception processing device, the multipath characteristic measurement signal array and data transmission signal array a transmission signal.*

Fig. 3 of the present specification illustrates a plurality of matrices that are used to form a transmission signal. For example, in the matrix of Fig. 3A, **a row vector Ax is provided as a common row vector** for the matrices used for the multipath characteristic measurement signal. In Fig. 4, because the multipath characteristic measurement signal Ax has the matrix coefficient array '++++++++', a multipath characteristic measurement signal array 'An, 0, ···, 0, An, 0, ···, 0, An, 0, ···, 0, An, 0, ···, 0, An, 0, ···, 0, An, 0, ···, 0, An, 0, ···, 0, An, 0, ···, 0,' is formed. Likewise, because the data transmission signal Bx has the matrix coefficient array '+---+-++', the data transmission signal array 'Bn, 0, ···, 0, -Bn, 0, ···, 0, -Bn, 0, ···, 0, -Bn, 0, ···, 0, Bn, 0, ···, 0, -Bn, 0, ···, 0, Bn, 0, ···, 0, Bn' is formed. The data transmission signals Cn to On are also similar (pages 14-17).

Moreover, Fig. 7A of the present specification shows a case where two matrices X1 and X2 comprising a common row vector are applied to user U1 and user U2 respectively. User U1 spread-modulates the multipath characteristic measurement signal Ax and data transmission signals Bx to Hx by using matrix X1. Further, user U2 spread-modulates the multipath characteristic measurement signal Ax and data transmission signals Ix to Ox by using matrix X2. The data transmission signal array obtained by the spread modulation is received via the transmission system and data transmission signals are extracted by means of a matched filter. User U1 comprises a matched filter that corresponds with matrix X1 and demodulates the data transmission signal that has been spread-modulated by matrix X1 to extract the multipath characteristic measurement signal Ax and data transmission signals Bx to Hx. Meanwhile, user

U2 comprises a matched filter that corresponds with matrix X2 and demodulates the data transmission signal that has been spread-modulated by matrix X2 to extract the multipath characteristic measurement signal Ax and data transmission signals Ix to Ox. **In this transmission system, irrespective of the user, the multipath characteristic measurement signal Ax does not interfere with the data transmission signals Bx to Hx and data transmission signals Ix to Ox and can therefore be extracted separately without a constitution subject to the effect of the multipath characteristic** (pages 18-20).

In other words, the method recited for the communication system of the claimed invention designs signals so that interference between the respective **data transmission signals is permitted** and so that a plurality of data transmission signals do not interfere with at least the multipath characteristic measurement signals and **allows the multipath characteristic measurement signal to be separated from the data transmission signal**.

In contrast, AAPA discloses wherein all the multipath characteristic measurement signals and plurality of data transmission signals do not interfere with one another. This is because, in AAPA, a square orthogonal matrix in which the row vectors and column vectors are orthogonal to one another is used to perform spread spectrum modulation on a multipath characteristic measurement signals An and a plurality of data transmission signals Bn, Cn, and Dn. For example, in Fig. 16, for the multipath characteristic measurement signals An, the signal array (An, An, An, An) is formed and, for the data transmission signals Bn, Cn, and Dn, the

respective signal arrays (Bn, -Bn, Bn, -Bn), (Cn, Cn, -Cn, -Cn) and (Dn, -Dn, -Dn, Dn) are formed (page 2 of the present specification).

In other words, AAPA neither teaches a plurality of coefficient matrices nor does it comprise at least one coefficient array that is common in the column direction or row direction of the plurality of coefficient matrices. Because it fails to teach a plurality of coefficient matrices and at least one coefficient array that is common in the column direction or row direction, it necessarily fails to teach the multipath characteristic measurement signal formed by the respective coefficient matrices is the same signal array formed by the one common coefficient array as noted in the example of Fig. 7A above that shows having at least two matrices X1 and X2.

In addition, neither Kim nor Hottinen reference remedy the deficit of AAPA they too fail to teach or suggest at least a plurality of orthogonal square matrices that comprise a common row vector or column vector and, as a consequence, they necessarily fail to disclose the multipath characteristic measurement signal formed by the respective coefficient matrices being the same signal array formed by the one common coefficient array.

Because the proposed combination of references does not teach or suggest all of the claimed steps in claims 1 and 7, it is submitted that claims 1-12 would not have been obvious

over these references. Accordingly, it is requested that the rejection under 35 U.S.C. 103 be withdrawn.

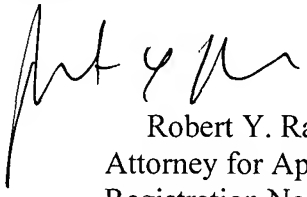
Conclusion

The Claims have been shown to be allowable over the prior art. Applicants believe that this paper is responsive to each and every ground of rejection cited in the Office Action dated March 2, 2009, and respectfully request favorable action in this application. The Examiner is invited to telephone the undersigned, applicants' attorney of record, to facilitate advancement of the present application.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP



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